

Application No. 10/711,364  
Technology Center 1775  
Amendment dated June 6, 2007  
Submission Accompanying RCE under 37 CFR §1.114

**Amendments to the Drawings:**

The attached two (2) sheets of drawings includes a change to Figure 3 and present new Figure 8.

The first sheet, which includes Figures 2 and 3 only, replaces the original drawing sheet that also included Figures 2 and 3 only. In Figure 3, new reference numerals "54" and "56" has been inserted to identify portions of the grain columns 44 between the localized regions 52.

The second sheet includes new Figure 8 only. In Figure 8, a single grain 144 is shown whose configuration is a result of the deposition process described in [Para 30].

Attachment(s): Replacement Sheet(s) (2)

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### REMARKS

Please enter this Submission in response to the Request for Continued Examination filed herewith under 37 CFR §1.114.

In response to an Office Action dated December 6, 2006 (Paper No. 20061128), Applicants have amended the specification, claims, and drawings as set forth above. More particularly:

The specification has been amended at paragraph [0020] to insert reference numbers "54" and 56," which identify portions of each grain column 44 between the localized regions 52.

The specification has also been amended to insert new paragraph [0016.1] and revise paragraph [001620] to make reference to new Figure 8, which is limited to schematically representing a single grain 144 whose configuration is a result of the deposition process described in [Para 30].

Independent claims 1 and 12 have been amended to specify that, within the interior regions (40,50) of the columns (34,44) comprising the multiple first portions (54) and multiple second portions (56) therebetween, at least one of the first and second portions (54,56) is linear, and at least one adjacent pair of the first and second portions (54,56) is separated and

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adjoined by a curved portion (52). Support for these amendment can be found in Applicants' original Figures 3, 5, and 6 and in Applicants' specification at [Para 30].<sup>2</sup>

New dependent claims 44-55 have been presented. Claims 44 and 50 find support in original Figures 3 and 5 and the process described at [Para 30] and now depicted in new Figure 8. Claims 45 and 51 find support in Figure 3. Claims 46 and 52 find support in original Figures 5 and 6 and the process described at [Para 30] and now depicted in new Figure 8. Claims 47 and 53 find support in original Figure 5 and the process described at [Para 30] and now depicted in new Figure 8. Claims 48 and 54 find support in original Figure 6. Claims 49 and 55 find support in the process described at [Para 30] and now depicted in new Figure 8.

Applicants believe that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-19 and 44-55 are respectfully requested in view of the above amendments and the following remarks.

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<sup>2</sup> According to MPEP §2163 II.A.3(a), "drawings alone may provide a 'written description' of an invention as required by [35 USC §112, first paragraph]," and "[i]n those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification." (Citations omitted).

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### **Prior Art Rejections**

Independent claims 1 and 12 and their dependent claims 2-11 and 13-19 were rejected under 35 USC §102(b) as being anticipated by International Publication No. WO99/35306 to Marijnissen et al. and by U.S. Patent No. 5,876,860 to Marijnissen et al., and dependent claims 11 and 19 were rejected under 35 USC §103(a) as being unpatentable over U.S. Patent No. 6,455,173 to Marijnissen et al. in view of U.S. Patent No. 6,126,400 to Nichols et al. (Nichols), and as being unpatentable over U.S. Patent No. 5,876,860 to Marijnissen et al. in view of Nichols. For the reasons explained in Applicants' amendment filed September 21, 2006, the following discussion will simply refer to "Marijnissen" in reference to International Publication No. WO99/35306 to Marijnissen et al., U.S. Patent No. 5,876,860 to Marijnissen et al., and U.S. Patent No. 6,455,173 to Marijnissen et al., as if they were one and the same.

Applicants respectfully request reconsideration of the rejections in view of the amendments presented above as well as the following comments. (For convenience, Applicant's comments identify elements of the claims with the reference numbers used in Figure 3, though it should be understood that the claimed invention also covers the embodiments of other Figures.)

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Each of Applicants' amended independent claims 1 and 12 requires

the interior regions [50] of the columns [34] comprising multiple first portions [54] and multiple second portions [56] between the first portions so that each adjacent pair of the first portions [54] is separated by one of the second portions [56], at least one of the first and second portions [54,56] being linear, at least one adjacent pair of the first and second portions [54,56] being separated and adjoined by a curved portion [52] . . . .

As such, each grain column (34) has a linear (straight) portion (54/56) that, due its linearity, has a discrete orientation, and adjoins a curved portion (52) that, due to its nonlinearity, does not have a discrete orientation. Such a grain structure is the result of a coating process in which the transition from one "hold" orientation (which creates a "straight" portion 54/56 of a column 44) to another is performed over an extended interval (to create a "curved" portion 52 of a column 44) as described in [Para 30], the result of which is to intentionally induce a "waviness" in the TBC as shown in original Figures 3, 5 and 6, described in [Para 30], and now also schematically depicted in new Figure 8.

In contrast, Marijnissen is limited to ceramic topcoats 44 with grains 48 that are either entirely made up of linear (straight) portions that intersect each other to create a herringbone-type pattern as shown in Figures 2, 3A, 3B, 3C, and 3D and as dictated by the square waveform 70 of Figure 7, or

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have an entirely sinusoidal or helical shape as shown in Figures 8 and 9 as dictated by the sinusoidal waveform 72 of Figure 7. Applicants believe that Marijnissen does not disclose or suggest a coating process in which the transition from one "hold" orientation to another is performed over an extended interval to intentionally induce a "waviness" in the TBC as shown in original Figures 3, 5 and 6, described in [Para 30], and schematically depicted in new Figure 8.

In view of the above, Applicants believe that Marijnissen does not anticipate independent claims 1 or 12 nor any of their dependent claims under the test for anticipation set forth at MPEP §2131, and therefore respectfully request withdrawal of the rejections under 35 USC §102.


Under the 35 USC §103(a) rejections, Nichols was applied for its disclosure that "the ceramic coating is applied to the leading edge of airfoils." In view of the above remarks concerning the differences between Marijnissen and Applicants' invention recited in independent claims 1 and 12 (from which claims 11 and 19 depend, respectively), Applicants believe that the combinations of Marijnissen and Nichols do not yield Applicants' invention. Applicants therefore also respectfully request withdrawal of the rejections to the claims under 35 USC §103(a).

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**Closing**

In view of the above, Applicants respectfully request that their patent application be given favorable reconsideration. Should the Examiner have any questions with respect to any matter now of record, Applicants' representative may be reached at (219) 462-4999.

Respectfully submitted,



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Attachments: Replacement Drawing Sheets (2); Request for Continued Examination (RCE) Transmittal (2 copies)